SUBJECT: Protective Plumbing Subsidy Program for Basement Flood Relief (PW09082) - (City Wide)

RECOMMENDATION:

(a) That the General Manager of Public Works be authorized and directed to implement a program to subsidize the cost of investigations, installation of devices, drainage improvements and related works to help protect basements from chronic flooding as a result of storm water overloading of the wastewater collection system;

(b) That funding for the investments (on a prioritized basis) valued at approximately $2,000 per residential property that experienced multiple basement flooding, be funded from Account 5160772780, and that the budget for 2010 be brought forward during the Rate Budget process for 2010.

Gerry Davis, CMA
General Manager
Public Works Department

EXECUTIVE SUMMARY:
Since 2004 and most recently on July 26 and August 29, 2009 the City of Hamilton has been subject to increasingly frequent and violent severe storms that have resulted in overloading of segments of the wastewater collection system. This has resulted in sanitary backups and basement flooding in many areas of the City. The potential impacts of climate change could mean that this trend of less predictable weather and
more extreme storms will continue. A proactive approach to minimize the potential impacts due to severe weather events, beyond just capital works, must be examined and implemented.

In addition to the financial assistance provided by the Compassionate Grant Program, and as part of the ongoing initiative to reduce flooding impacts, staff recommends to initiate a Protective Plumbing Subsidy Program to assist with the cost of installing devices (i.e. Backwater valves) and related works that may help protect basements from flooding resulting from sewer surcharging and from defects and deficiencies on residential private property drainage systems (i.e. cracked and blocked laterals). These works would be subsidized by the City for each household up to a cost of $2,000. This Program will be delivered on a prioritized basis focusing on those areas of the City that are most frequently and severely affected by wet weather events.

In order to implement the program in the most expeditious manner the Water and Wastewater division intends to retain contracting and/or consulting service to assist with inspection services and program administration. The intent of the Water and Wastewater division is to work concurrently with the successful proponents to inspect sewer laterals and property drainage in an effort to implement solutions quickly and effectively.

Solutions can include:

- Inspection and lining or replacement of sewer laterals on the Private portion, Public portion, or both.
- Disconnection, capping and redirection of downspouts.
- Contract administration services to reimburse households for the installation of a Mainline Backwater Valve and associated residential plumbing inspection services completed only by a Licensed Plumber.

**BACKGROUND:**

Direction given to staff Report # : FCS06007(c)

Adopted by Council August 4th, 2009

**RECOMMENDATION:**

e) That staff develop and report back on a mitigation program, that entails investments valued at approximately $2,000, per residential property, that have experienced multiple basement flooding, on a prioritized basis, in an effort to minimize the potential impacts due to severe weather events;

Since the most recent storm events, staff have undertaken numerous initiatives, the first being A comprehensive RADAR storm event analysis to analyze and assess the meteorology and runoff of our most recent and severe storm. However, severe storms and urban flooding in the City of Hamilton are no longer infrequent events. As the Independent Community Panel Report (2006) and the more recent 2009 update to this report indicate, due to the increasingly visible effects of climate change, it is prudent for the City of Hamilton to plan infrastructure and programs for a likely increase in frequency of severe storm events. A number of capital works are already planned that will alleviate flooding and there is a strong focus on physical infrastructure
improvements. Despite accelerating construction schedules, these works will take time and once constructed cannot perform beyond intended design standard. Complementary measures in the short term are needed.

Hamilton is not alone. Many other municipalities are faced with increasingly frequent and severe urban flooding and multiple basement backups. One complementary solution to capital works is the implementation of lot-level works. These typically include investigation/rehabilitation of laterals, disconnection of downspouts and installation of backwater valves.

A number of active projects currently complement and would support a Protective Plumbing Subsidy Program, including:

**A Pilot Program for Basement Flood Relief**

Beginning in December 2008 public works staff pre-selected a number of properties in Hamilton to participate in this pilot program which was intended to last for one year and subsidizes:

- Installation of a normally-open, Mainline Full-Port Backwater Valve™ (up to $2,000)
- CCTV Drain Inspection (up to $1000)

75 properties were selected based on documented basement flooding problems and proximity to impacted areas related to sanitary or combined sewer back-ups. Most of the selected properties have experienced flooding during significant storm events from 2004 - 2008: Of the 75 households invited to participate in the pilot project, **thirty homes have applied to participate in the program and twenty have installed backwater valves** There have been no reports of repeated flooding from these residents despite severe wet weather.

**Development of an all-pipes sewer model**

As part of system wide collection system improvements we are creating an all-pipes model of both the sanitary and combined systems that will be of a suitable resolution to assist in the forensic analysis of the causes and effects of localized flooding. Currently, we have a trunk sewer model that is suitable for larger scale planning but not fine enough to resolve local system problems. The all-pipes model should be substantially complete by the end of summer 2010.

**Flood Mapping**

An inventory of areas with basement backups caused by severe storms, or with the potential to be impacted, is currently available and updated following each event. These areas can be prioritized for action.

**Sewer Lateral Management Program**

Since 2005 the Water and Wastewater division has administered a sewer lateral management program that, under certain circumstances, will maintain, repair and replace the Public Portion of a sewer lateral.

**ANALYSIS/RATIONALE:**

Due to frequent and severe basement flooding and the likelihood of future severe storms there is a need to quickly implement solutions to complement longer term capital
works. It is likely that drainage design limits will continue to be stressed and exceeded. Lot level solutions can be implemented in the short term:

**Lateral Investigation and Rehabilitation**

Leaky and damaged laterals can contribute a significant amount of unintended excess flow to the collection system, contributing to widespread surcharging, or may become blocked, flooding the homeowner. A review of the literature indicates that leaky laterals can contribute more than 50% of the unintended extraneous infiltration to a collection system. Closed Circuit Television (CCTV) inspection and required servicing will reduce the frequency of sewer lateral related flooding problems.

In addition, laterals that are clogged, broken or have serious root intrusion can cause severe and repeated flooding in basements if the weeping tiles are hooked up to the floor drain. The repair of these laterals could drastically reduce the amount of flooding in some areas.

**Downspout Disconnection**

Where feasible, the disconnection of downspouts and redirection to a pervious surface can infiltrate or delay runoff and reduce overloading of the collection system. This will require the amendment of certain planning policies and By-laws and not all homes would be a candidate for this type of program.

**Backwater Valves**

Installation of a backwater valve can effectively isolate a basement from flooding due to temporary sewer surcharge. The Mainline Full-port Backwater Valve™ is currently the only backwater valve approved in the Province of Ontario for home installation that may be installed on the Homeowner’s main sanitary sewer lateral. The normally open design allows unobstructed sewage flow and automatic closure of the gate upon reversal of flow (sewer backup) protecting the entire building from backflow.

Manufactured in Canada, this award winning valve has been installed across North America since 1997, with hundreds of thousands of installations to date, and over 40,000 new installations per year. The plumbing code In Alberta requires every building to be protected and the Mainline valve is used in about 95 per cent of the homes in western Canada. In new homes, the company has never had a valve failure.

Other major municipalities such as Halton, St. Catharines, Niagara Falls, London, Saskatoon, Ottawa, Toronto and Edmonton have implemented flood relief programs consisting of some or all of the above with good results. Water and Wastewater staff have consulted with many of these other municipalities, gaining valuable insight into best practices and lessons learned and are prepared to implement this program.

**ALTERNATIVES FOR CONSIDERATION:**

Alternatives for consideration would be that Council take no action to offer a subsidy program or that they limit the program to one or more of the above solutions.
FINANCIAL/STAFFING/LEGAL IMPLICATIONS:

Financial Implications
A total of $1.85 Million in compassionate grants was allocated for flood events between July 2005 and August 2008. Compassionate grants for flooding resulting from the July 26, 2009, storm is forecast at an additional $4.7M to $5.9M. The amount for the August 29th storm is to be determined.

The projected 2009 reserve for Water, Wastewater and Storm is approximately $42 million. These reserves are assumed as part of the ten year Water Wastewater and Storm capital financing strategy, the persistent depletion of these reserves for compassionate grants will threaten the sustainable financing of future water, wastewater and storm infrastructure investments, or require future rate increases to offset these and potential future transfers to match funds with the Municipal Disaster Relief Program Reserve.

There is potential for a good return on investment for the $2 Million dollar subsidy with fewer applications for compassionate grants as more basements are protected, laterals are rehabilitated and downspouts are disconnected.

Staffing Implications
During the initial phase of the program in 2009, the Waster and Wastewater Division intends to retain contracting and/or consulting services to assist with program administration and investigations. In 2010 budget process the Division will assess program delivery, the need for additional in-house resources, and make appropriate recommendations to Council.

Legal Implications
There are currently a number of By-laws relating to lot drainage, specifically downspout drainage. For houses with a roof area >50 m² built after 1987 and serviced by separated sanitary sewers constructed after 1970 downspouts must be connected to the storm sewer (By-laws 88-009 and 88-207). There are likely very few areas of the city that fall into this category and are affected by chronic flooding however, pending further analysis there may be a need to amend the By-law.

POLICIES AFFECTING PROPOSAL:
The Public Works Business Plan, Innovate Now and the Water and Wastewater Strategic Business Plan for 2008 - 2010

The recommendations from this Report will assist in meeting Public Works’ key goal, to be recognized as the centre of environmental and innovative excellence in Canada. In addition, implementing the recommendations will also assist Public Works in building on our four Strategic Vision Drivers as follows:

Communities (Services our communities connect with and trust) -
Implementing the Protective Plumbing Subsidy Program will improve the quality of life of our community and help us deal with the effects of wet weather impacts caused by severe storms and climate change while adhering to the mandate of the Water and Wastewater Division to protect public health, property and the environment.
People (Skilled teams ready for any situation) -
This program demonstrates the ability of our City staff to engage and assist our community in protecting property, public health and the environment and deliver timely services. This proposed program demonstrates forward thinking and a creative solutions to the problems in our community

Process (Smart processes to match our needs) -
Public Works will maximise our investment in smart processes and divisional tools to manage this program while we continually define and map improvements.

Finances (Sound finance management for the long haul) -
The Protective Plumbing Subsidy Program will likely deliver a good return on investment by reducing the extent of future flooding and the need for Compassionate Grants.

RELEVANT CONSULTATION:
Public Works - Capital Planning and Implementation

CITY STRATEGIC COMMITMENT:
By evaluating the “Triple Bottom Line”, (community, environment, economic implications) we can make choices that create value across all three bottom lines, moving us closer to our vision for a sustainable community, and Provincial interests.

Community Well-Being is enhanced. ☑ Yes ☐ No
This program will assist those in need during a traumatic time in their lives and will enhance homeowner’s stress over future heavy storm events.

Environmental Well-Being is enhanced. ☑ Yes ☐ No
By reducing the number of sewers that back up into people’s basements we are eliminating a potential health risk due to bacteria and mould infestation.

Economic Well-Being is enhanced. ☑ Yes ☐ No
This program will assist the City enhance its image in the community, which should assure people that when they move to a home in Hamilton, the City will help them in a time of need. This should attract people to this community and enhance overall economic well being.

Does the option you are recommending create value across all three bottom lines?
☑ Yes ☐ No
This program offers a balance between the environmental, social and economic well being and offers value to all three.

Do the options you are recommending make Hamilton a City of choice for high performance public servants?
☑ Yes ☐ No
This program is leading edge and will encourage staff to be compassionate and assist their fellow citizens in a great time of need.